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Artificial Life in Electronic Circuit

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ABSTRACT: India is the crop growing based country. Our ancient public entirely depended on the farming realizing. Agriculture is a cause of living of mainstream Indians and has great control on the economy of the country. In dry zones or in situation of lacking rainfall, irrigation comes to be difficult. So, it wants to be involuntary for correct produce and measured at all for farmer protection. Increasing energy costs and decreasing water supplies point out the need for healthier water management. Irrigation management is a hard decision making progression to control when and how much water to relate to a growing crop to meet exact management objectives. If the farmer is far away from the agricultural land he will not be noticed of current environments. So, capable aquatic association plays a vital role in the irrigated agricultural harvesting structures. A small cost another key for well-organized aquatic checking presently in use is drip irrigation structures that contain of an automatic processor to turn on & off the control values, which in turn helps the farmers by management the water supply to the crop fields and supplementary keeps the humidity levels of soil that helps in better crop production. This project probes into the design of the mindless irrigation system based on Arduino technology. This Embedded development is to intention and growth a low cost feature which is established on inserted stage for aquatic irrigation system. This mission uses DHT11 and soil moisture sensors to sense the water amount present in farming. The project uses Arduino that processes the information and acts according to the data. The goal of the operation was to prove that the programmed irrigation can be used to decrease aquatic use.

KEYWORDS: Arduino, Sensors, GSM/GPRS, DHT11 Sensor, Water level Sensor

I. INTRODUCTION

Now a day's most of the lands are becoming unfertile, more scarcity of water for farming Due to this in the modern world, we can't able to do agriculture as in traditional way So, if didn't try to stop this we may going to suffer with scarcity of food so by using technology how we can able to grow plants in self-automated way without manpower ,So this idea is key for doing this project. Mainly in our project we are using the Arduino Board, Sensors, GSM/GPRS module ,LEDS and LDR which we are using for smart irrigation process. For this project we designed a Arduino code for proper working of sensors and GPRS module for providing information to the user about specific user application. This is the main theme and introduction to our project. This project is mostly helpful to each and every animal because we cant survive without food. This project people can develop knowledge about smart irrigation and enjoys the food from that irrigation from their home itself.

II. MOTIVATION

Now a days its terribly tough to do irrigation on this unfertile land ,day by day the land fertility is drastically decreasing according to the statistics of world soil resources, so idea came up to mind that why cant grow plants by using technology to avoid scarcity of food in future by using technology the manpower is also reduced in other words we can conclude that the computer is going to grow our food in future.

III. LITERATURE SURVEY

Karan Kansara, Vishal Zaveri, Shreyans Shah, SandipDelwadkar and KaushalJani

In Sensor based Automated Irrigation System with IOT mentioned about using sensor based irrigation in which the irrigation will take place whenever there is a change in temperature and humidity of the surroundings. The flow of



water is managed by solenoid valve. The opening and closing of valve is done when a signal is send through microcontroller. The water to the root of plant is done drop by drop using rain gun and when the moisture level again become normal then sensor senses it and send a signal to microcontroller and the value is then closed. The two mobile are connected using GSM. The GSM and microcontroller are connected using MAX232. When moisture of the soil become low moisture sensor sense it and send signal to microcontroller, then the microcontroller gives the signal to mobile and it activate the buzzer. This buzzer indicates that valve needs to be opened by pressing the button in the called function signals are sent back to microcontroller. Microcontroller used can increase System Life and lower the power Consumption. There system is just limited to the automation of irrigation system and lacks in extra ordinary features.

Joaquin Gutierrez, Juan Francisco Villa-Medina, and Alejandra Nieto-Garibay, Miguel Angel Porta-Gandara

In Automated Irrigation System Using a Wireless Sensor Network and GPRS Module mentioned about using automatic irrigation system in which irrigation will take place by wireless sensor units (WSUs) and a wireless information unit (WIU), linked by radio transceivers that allowed the transfer of soil moisture and temperature data, implementing a WSN that uses ZigBee technology. It takes a measure of temperature and moisture using sensor and controlled by microcontroller. The WIU has also a GPRS module to transmit the data to a web server via the public mobile network. The information can be remotely monitored online through a graphical application through Internet access devices. This irrigation system allows cultivation in places with water scarcity thereby improving sustainability and it is feasible system. But due to Zigbee protocol this system becomes more costly.

G. Nisha and J. Megala

In Wireless Sensor Network Based Automated Irrigation and Crop Field Monitoring System mentioned about using wireless sensor network based automated irrigation system for optimize water use for agricultural purpose. The system consists of distributed wireless sensor network of soil moisture, and temperature sensors placed in the crop field. To handle the sensor information Zig bee protocol used and control the water quantity programming using an algorithm with threshold values of the sensors to a microcontroller for irrigation system. The system continuously displays the abnormal condition of the land (soil moisture, temperature level). Using a GSM modem with GPRS facility feature provides the information to fanners and interface with PIC 18F77 A microcontroller. The Irrigation system is automatic and manual mode. This system increases the crop fields, improve the crop quality, increase the energy and reduce the non-point source pollution. Due to PIC microcontroller the length of the program will be big because of using RISC (35 instructions).

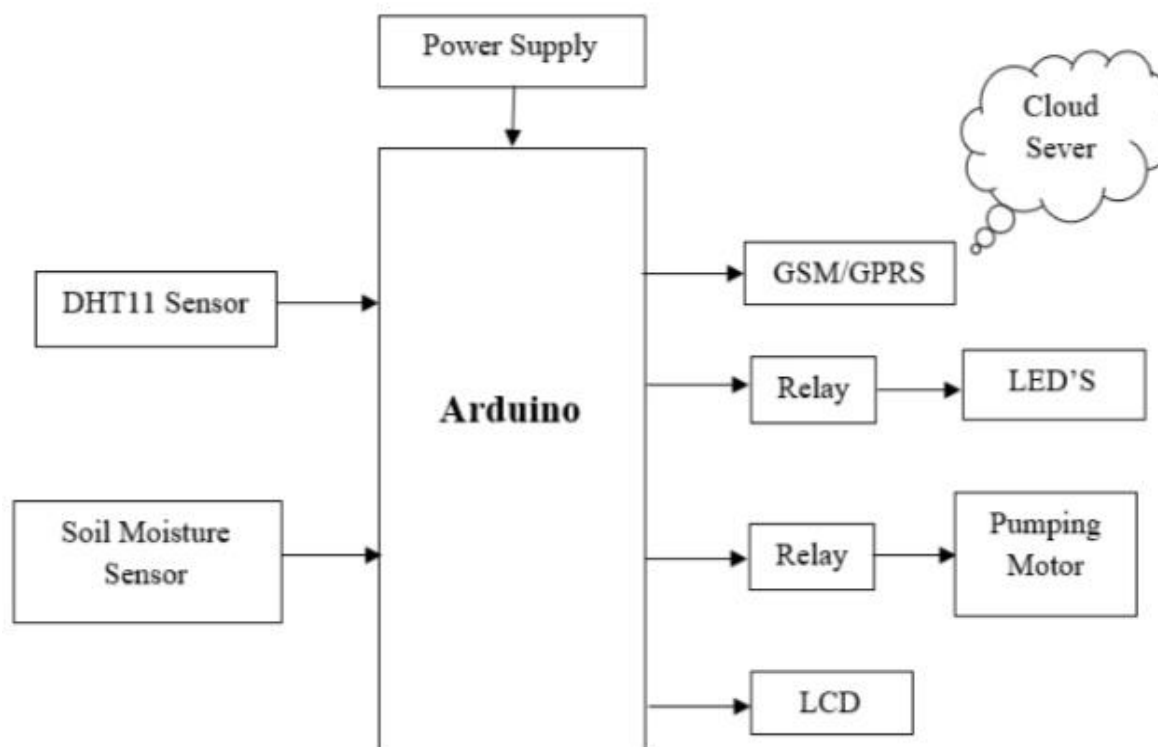
IV. PROPOSED WORK

In the Proposed System the user has sufficiently used the technology in the agricultural sector, here in this system we are using the Moisture Sensor to identify the moisture content in soil and DHT11 Sensor is used to monitor the Humidity and Temperature levels in the circuits. The data of these Sensors is directly displayed on the LCD in Blynk App; with this user can easily able to have the required Climatic, Moisture for to grow plants in the circuit.

V. METHODOLOGY

Methodology is a Systematic way of working a standard process that describes the process that describes the process in simplest possible way. The design includes the application of Scientific principles, technical information and practical implementation of smart irrigation without land medium and without manpower.

BLOCK DIAGRAM



Working principle :

- Artificial life in electronic circuit is nothing but growing plants from seed to its maturity using fogponics.
- Fogponics is nothing but providing enrich nutrients to the plants in the form of mist.
- Here we do not use any soil medium, so to support the roots of the plant we use rock wool.
- Since we are growing different varieties of plants together, choose the seed properly so that it provides quick results.
- Now by using “ EAGLE “ software we design PCB layout as PNG image.
- Later we place microcontroller, resistor, capacitor on PCB and solitor it.
- Also we write the software program to run our project and execute it in Arduino IDE.
- If it compiles without any errors then this code is dumped into the Arduino board for proper working of sensors.
- Now we take the vaccum type container and by using the Autodesk 360 fusion software, we place all the components like PCB layout, Arduino board, sensors into it.
- After placing all those components in container, switch on it and see its outcome.

VI. COMPONENT SURVEY

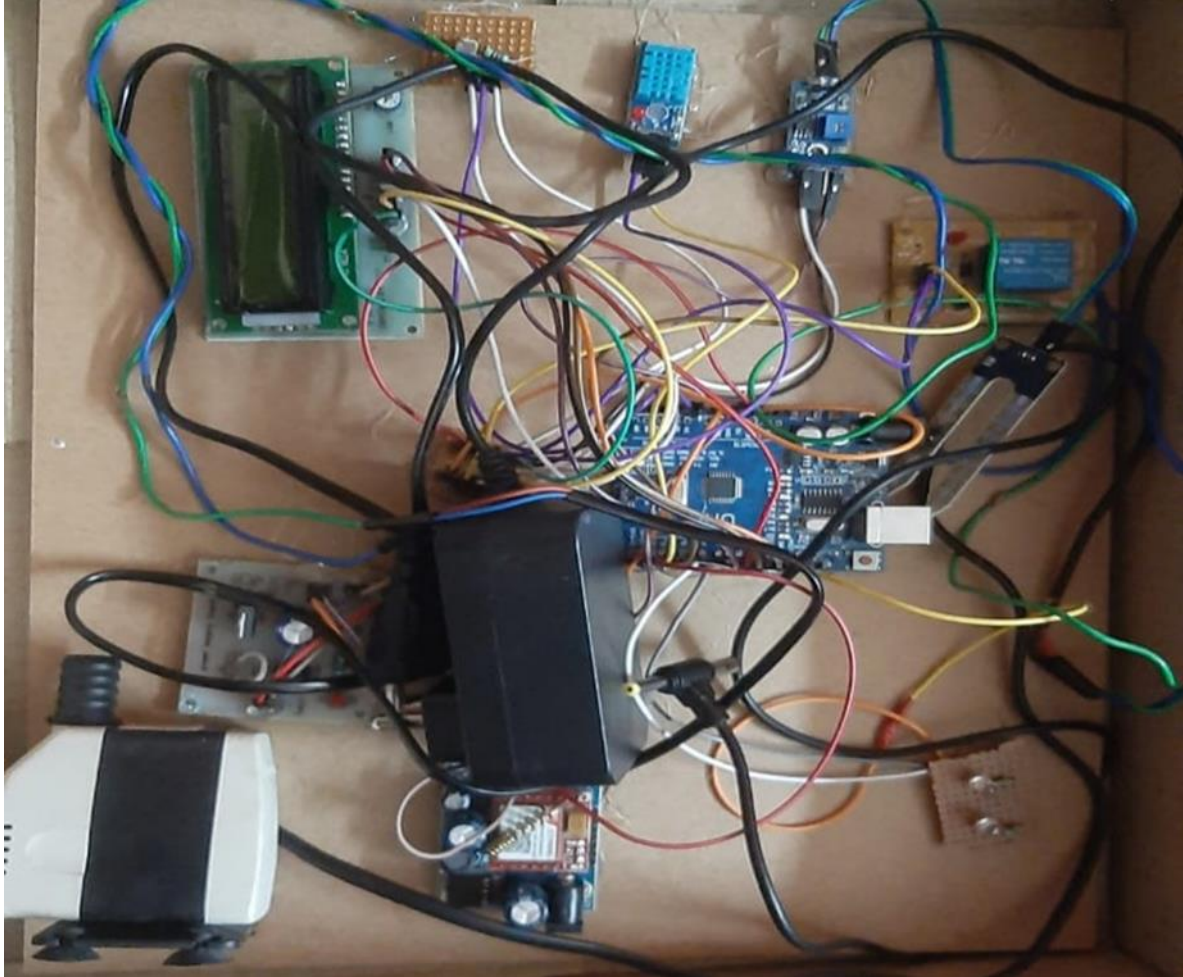
MICROCONTROLLER: The ATMEGA32P microcontroller which is main component in the device in which will provide self-automation facility to entire circuit.

ARDUINO BOARD: The Arduino board contains the main microcontroller and other components are connected to it which will provide the power supply to the entire board.

GSM/GPRS Module: The GSM/GPRS Module which is used to provide the power supply to the entire Board.

DHT11 Sensor: Sensor which is used to detect the temperature and humidity conditions in the circuit.

LDR: Light dependent resistance which is used to provide the light to the circuit in the dark conditions.



VII. RESULT

The result of this project is building a circuit where we need to grow plants without soil medium with the new method called fogponics in self-automated way.

VIII. CONCLUSION AND FUTURE SCOPE

- On this developing nation ,earlier we have plenty of land resources for plantation.
- As in the name of development we destroyed many fertile lands.
- As soon as possible we are going to face scarcity of food in future.
- So to stop this tragedy by using technology we can cultivate without land medium
- And that is our main projects purpose to build this project.

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